

## **Statement of Purpose**

To build upon the knowledge and experience that I have gained through the research projects and coursework in my post-graduate and undergraduate education, I wish to pursue Ph.D. studies at the Joint Doctoral Program at IIT Kharagpur and University of Manchester.

I have completed my Bachelor's program in Textile Technology from one of the best Government aided Textile Institute located in Kanpur which is also known as Menchester of North India, formerly known as Government Central Textile Institute, Kanpur. My first exposure to research was 6<sup>th</sup> semester, under our HoD (Head of Department) Dr. Pramod Kumar Diwakar on "To Reduce the Knotting Time on the Air jet Weaving Loom". The aim was to Reduce Knotting time after the ending up of Weaver's Beam. The optimization of the this process improvement leads to save the overall weaving cost of fabric. As a result of which, I became familiar with the operation of Weaving, Spinning and Processing. I have explored the process of fibres processing, Yarn Manufacturing, Fabric Manufacturing, Knitting technology, Fabric Finishing etc. Through this experience, I was exposed to the fundamental of Textile materials, research, and their processing machines. I can confidently state that it laid the foundation stone for my passion towards research into the Field of textile composites for advanced application.

After that I got placed into one of the Textile Sector leading company in India named as Trident Group. I have one year of work Experience in World Largest Terry Towel Unit Located in Budhni Madhya Pradesh. During my working period I have done several projects including Power cost reduction in Postspinning Department, Reduction of Terry towel Defects and Reduction of Air consumption of Airjet Weaving Loom. These projects and work brought me a lot of confidence and motivation to continue my Project and Research Journey from one of India's best institute IIT Kharagpur.

In 2019, I cleared the GATE (Graduate Aptitude Test Exam) with All India Ranking 53 in Textile engineering and Fibre science. I got an offer from the prestigious, Indian Institute of Technology (IIT), Kharagpur for a Master of Technology (M.Tech.) in Rubber Technology. The course involved the basics of polymer science & technology, along with the engineering aspect to deal with various applications of polymeric materials. During the course work I came across, inspiring professor Dr. Narayan Chandra Das, and as my mentor for the M. Tech thesis. I was selected as an intern for a project at the Technical Department of J K Fenner India Limited, one of the largest manufacturers of V-belt and Hoses in the Indian subcontinent. Currently, I am working on the "SHORT FIBRE-REINFORCED ELASTOMERIC COMPOSITES: STUDY TOWARDS IMPROVEMENT OF TRIBOLOGICAL AND MECHANICAL PROPERTIES LIKE (WEAR TENSION & TEAR)". I have studied the mechanical property of composites related of different different fibre reinforced elastomeric composites. The work involved the study of Aramid fibre reinforced EPDM rubber in which Fibre content was varied from 2 to 20 PHR through which we can determine the optimum level of fibre concentration in to the rubber depending upon the requirement of mechanical properties and applications. I am utilizing various rubber & filler characterization equipment like **Mooney Viscometer, Rheometer, Instron tester, Ross and Damattia flex Tester, Din abrader, Compression Moulding, Rubber process analyzer, DMA, SEM, DSC, FTIR and many other Like compression set, rebound resilience, oil swell study, Hardness etc according to ASTM**. In this tenure, I learned to drive target-orientated research. This study will help in providing a better understanding for Fibre reinforced elastomeric composite. This excited me to dig further about futuristic world of Thermally and electrically conductive anti-fouling robust Smart fabric for microwave absorbing materials along with the protection of human health. I would like to take this acquired knowledge and enhance it further in the field of higher research.

My research experiences during the past few years have convinced me that the challenge of a research career will keep me happy and excited. I know that this calls for personal commitment and some sacrifice of personal time, leisure, and immediate reward. However, I believe that the long-term rewards make this worthwhile and that through my sense of responsibility, team spirit, a strong background in the fundamentals, and a desire to explore, I have what it takes to be a good researcher. In the long run, I see myself being active in the Material and Polymer Science community, using the power of scientific knowledge to address problems of practical importance. A Ph.D. degree would be the first step towards such a successful career. I am aware of the high standards set by IIT Kharagpur and the University of Manchester and I am confident of living up to it and contributing substantially to the research program. I am particularly interested in the topic of "**Thermally and electrically conductive anti-fouling robust Smart fabric for microwave absorbing materials along with the protection of human health**" under the supervision of Dr. Narayan Chandra Das and Dr. Zhirun Hu . I submit my candidature for admission to the Joint Doctoral program and look forward to a fruitful relationship with you soon.